

# Cypress v3

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**Samuel Sayer**

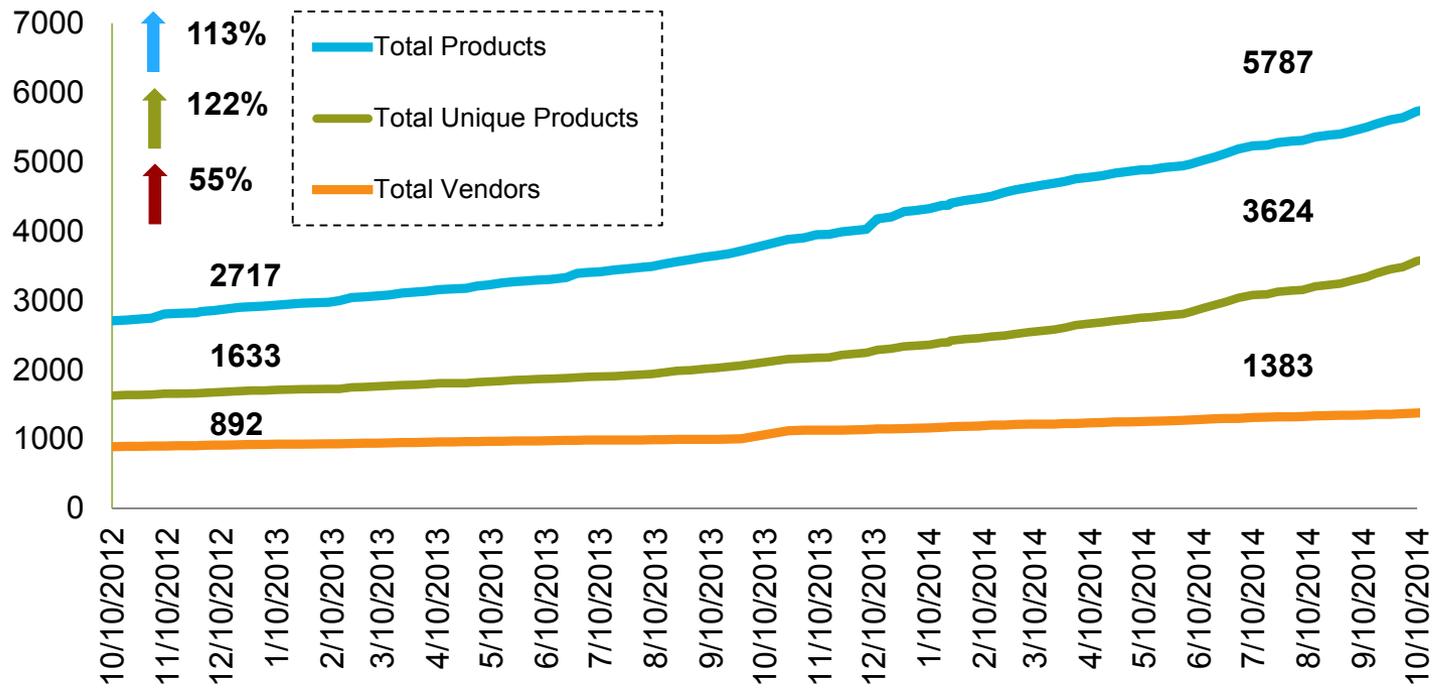
**The MITRE Corporation**

**HIMSS 2016**

# Cypress

- **The Centers for Medicare & Medicaid Services (CMS) and the Office of the National Coordinator for Health Information Technology (ONC) are focused on advancing the electronic clinical quality improvement ecosystem to move from manual, chart-based clinical quality measures to electronic clinical quality measures (eCQM).**
- **Cypress is the rigorous and repeatable testing tool for certifying Electronic Health Records (EHR) and EHR modules in the capture and calculation of eCQM.**
- **Cypress is open source and freely available for use or adoption by the health IT community including EHR vendors and testing labs.**

# Certified Health IT Products and Vendors



# Cypress Release Timeline



- **Vendor Feedback: Frequent releases causes frustration due to need to update.**
- **No more than two yearly releases going forward.**

*\* indicates release to support Annual Updates to eCQMs*

# Cypress Patient Test Deck

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# V2 Test Deck

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## ■ Test Deck

- 36 Patients for Eligible Professional (EP) measures
- 20 Patients for Eligible Hospital (EH) measures

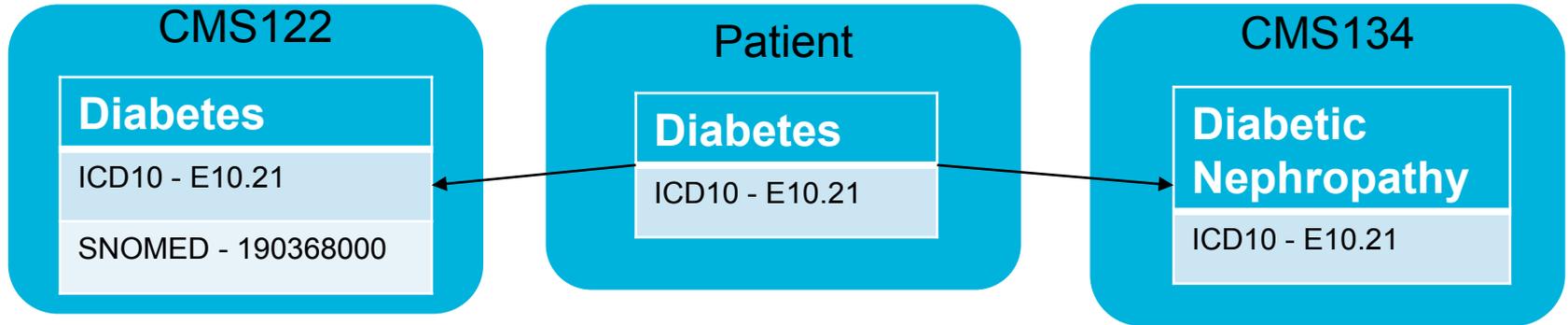
## ■ Coverage

- Test at least one IPP, DENOM and NUM for every measure
- DENEX / DENEXCEP only for Core measures

## ■ Rationale

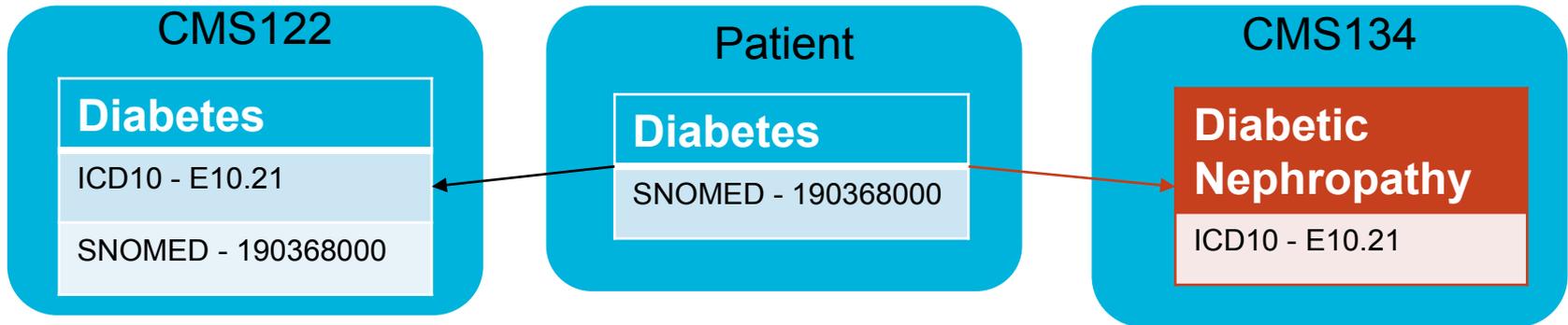
- Clinical Validity
- Manual Data Entry
- Value Set Crosswalk

# Crosswalk



IPP

NUMER



IPP

DENOM

Patient evaluates differently if EHR uses the “provided” Diabetes SNOMED code instead of the provided ICD10 code.

# V3 Test Deck(s)

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- **Test Deck**
  - Separate test deck for every measure
  - 77 Patients for Eligible Professional (EP) measures
  - 72 Patients for Eligible Hospital (EH) measures
- **Coverage**
  - Minimum 80%
  - Every patient population covered by test deck
- **Rationale**
  - Desire for Increased Test Rigor
  - Clinical Validity
  - Automated Ingest of QRDA Category I documents

# Increased Rigor

Measure	Type	V2 Coverage	V3 Coverage
CMS132	EP	4%	<b>83%</b>
CMS133	EP	3%	<b>81%</b>
CMS18	EH	15%	<b>83%</b>
CMS188	EH	19%	<b>83%</b>
CMS190	EH	13%	<b>80%</b>

# 2015 EHR Certification Rule

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# Test Procedures

## ■ V2

- C1: Capture & Export
  - Testing on a per measure basis
  - Data allowed from any selected measure
- C2: Import & Calculate
  - Testing across all selected measures
- C3: Submission
  - Testing baked into C1/C2 tests

## ■ V3

- C1 – Record
  - Manual entry of patient data
- C1 – Export
  - Testing on a per measure basis
- C2 – Import and Calculate
  - Testing on a per measure basis
- C3 – Report
  - Testing on a per measure basis
- C4 – Data Filter
  - Patient/Provider attribute filtering

# 2015 EHR Certification Rule Goals

- Increased Test Rigor
- Modular/Optional Certification
- Automated Import/Export of QRDA Cat I
  
- ***“...Require that a system user be able to import CQM data formatted to the QRDA standard for one or multiple patients at any time the user chooses and without additional assistance to operate.”***
  
- ***“...Require that a system user be able to export CQM data formatted to the Quality Reporting Document Architecture (QRDA) Category I standard at any time the user chooses for one or multiple patients and without subsequent developer assistance to operate.”***
  - *2015 Edition Health Information Technology (Health IT) Certification Criteria, 62649*

# C1: Record

- **Still a need to test entry of data elements for C1**
- **Subset of data elements from selected measures**
- **Test entry of uncommon data elements**
- **No test patients supplied. Vendor tested only on codes and metadata for data criteria**

## Manual Entry Checklist

<b>CMS30v5 Statin Prescribed at Discharge</b>	<b>Failing</b>
<b>CMS100v4 Aspirin Prescribed at Discharge</b>	<b>Failing</b>
<b>CMS53v4 Primary PCI Received Within 90 Minutes of Hospital Arrival</b>	<b>Failing</b>
<b>CMS60v4 Fibrinolytic Therapy Received Within 30 Minutes of Hospital Arrival</b>	<b>Failing</b>

### CMS30v5 Statin Prescribed at Discharge

Completed?	Description	Attributes
<input checked="" type="checkbox"/> Completed	Diagnosis, Active	Ordinal
<input type="checkbox"/> Completed	Encounter, Performed	Length of stay

# C1, C2, C3: Single Measure Tests

- Used for both C1, C2, and C3 certification
- Document Duplication
  - Future releases may increase complexity of duplication algorithm
- Additional validations based on common submission requirements
- Program specific submission errors displayed as warnings

Measure Information	C1 and C3	C2 and C3
<b>Measure:</b> Aspirin Prescribed at Discharge <b>CMS ID:</b> CMS100v4  <a href="#">View Patients</a>	QRDA Errors -- Reporting Errors -- Submission Errors -- Execution Date --	QRDA Errors -- Reporting Errors -- Submission Errors -- Execution Date --  <b>start</b>

## 1 ⚡ Download Test Deck

Download and import this data into your EHR clinical quality measure calculator.

[Download QRDA Cat I \(.zip\)](#)

## 2 ⚡ Upload files

Upload results from the EHR system in the form of a zip file of QRDA Category I documents to get test results. This will automatically run a test execution.

[Select file](#)

# C4: Data Filter

## Filter Capabilities:

- Demographics
  - Race
  - Ethnicity
  - Gender
  - Payer
  - Age
- Problem List
- Provider
  - NPI
  - TIN
  - Practice Site

C1

C2

C3

C4

### Filter Information

**Measure:** Dementia: Cognitive Assessment

**CMS ID:** CMS149v4

**Ethnicities:** Not Hispanic or Latino (code: 2186-5)

**Races:** Black or African American (code: 2058-6)

### View Patients

#### 1 ⚡ Download Test Deck

Download and import this data into your EHR clinical quality measure calculator.

 Download QRDA Cat I (.zip)

# Testing C4 in Cypress v3

- **Uses patient population from a single measure**
- **Combination of demographic filters**
  - “All African-American Males”
  - “All Hispanics over the age of 65”
  - “All Medicaid patients under 30”
- **Problem List**
  - All patients that have a SNOMED code from a specified value set
- **Provider**
  - All patients that visited a specific provider, using a specific TIN at a single address

Patient	Race/Payer	Payer/Ethnicity	Diagnosis	Provider Location
Expected Patients	4	3	3	2
Reported Patients	4	3	3	2
Missing Patients	0	0	0	1
Unexpected Patients	0	0	0	1
Jennifer Doe	✓			
Holly Arthur			✓	
Joon Gianni	✓	✓		
Celeste Kim				✓
Alec Baldwin	✓		✓	
Shannon Thompson	✓			
Jessica Lee			✓	✗
Robin Williams		✓		
Hank Weinstein				
Theresa Blaine		✓		?
Melanie Johnson				



# Demo Server

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- Hosted at <https://cypressdemo.healthit.gov>
- Available now!
- **Demo server will be updated as new features are available**
  - Requesting vendor feedback on frequency of updates/releases
- **Data may be deleted due to software updates**
- **Cypress v2 infrastructure to be retired 8/25/16**
  - Cypress v2 Demo Server
  - Cypress website will be retired and information will be moved to <https://cypress.healthit.gov>
- **Cypress 2.7.0 to be retired 3/11/16**
- **Cypress 2.6.1 will continue to be available for 2014 measures**
  
- **Please submit issues or suggestions to GitHub**
  - <https://github.com/projectcypress/cypress/issues>
  - JIRA will continue to be used for production Cypress versions

# Pre-Certification Testing

- **Cypress API**
  - REST API for performing certification tests
  - Goal is to allow vendors to perform all certification tests using only the API (apart from C1 Manual Entry Checklist)
  - Estimated availability in late March
  - Exploring building Cypress client SDKs
    - Need vendor input on languages/environments
- **Controlled Testing**
  - Non-randomized patient data
  - Disable de-duplication
- **Validation Utility features built into Cypress**
  - Measure calculation results included

# Other Planned Features

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- **Roles and permissions system**
  - Allows ATLS to offer public Cypress instance with certification data available to vendors
- **Cypress Administration Dashboard**
  - Monitor status of test creation / calculation
  - Manage installed Cypress bundles
  - Manage users and access
- **Responsive UI**
  - Works with displays from tablet to 4K
  - 508 Compliant
- **Cypress Submission Toolbox**
  - Features from Cypress Validation Utility built into Cypress v3

# Demo

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# Questions

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# Keep in Touch

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- **Cypress Talk List**
  - [project-cypress-stalk@googlegroups.com](mailto:project-cypress-stalk@googlegroups.com)
- **Cypress Bi-Weekly Tech Talks**
  - Next session March 15, 2016
- **ONC JIRA**
  - <http://jira.oncprojecttracking.org>
- **GitHub**
  - <https://www.github.com/projectcypress/cypress>

# Cypress Validation Utility

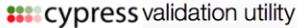
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# Cypress Validation Utility

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- **Web based QRDA validator**
  - <https://validator.projectcypress.org>
- **Supports Base & CMS QRDA Implementation Guides**
- **Synthetic patients/data only**
- **Intended audience is developers building test QRDA documents for certification and submission**

# Screenshot

 cypress validation utility

**WARNING:** This utility is meant for synthetic patient records only. **DO NOT** upload documents containing **Protected Health Information (PHI)** or **Personally Identifiable Information (PII)**.

The Cypress QRDA Validation Utility is intended as a development tool for EHR vendors who are testing synthetic QRDA Category I and Category III documents for conformance to CMS submission requirements. Files submitted for validation must not contain PHI or PII.

Document

Reporting Program Year

Reporting Program

Document Type

PHI Confirmation

Please check the box to acknowledge that you've read and understand the warning, and to the best of your knowledge, the submitted files will contain neither PII nor PHI:

# Validation Support

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- **QRDA Base IG**
  - QRDA Category I R2
  - QRDA Category I R3
  - QRDA Category III
- **CMS IG**
  - 2015 (support retired 3/11/16)
  - 2016
- **Additional validations**
  - Reporting Period
  - Performance Rate (QRDA Cat III)
  - Value Sets